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Vanessa S. Jackson

Applicant	:	Markus Szymaniak	Confirmation No. 9691
Application No.	:	09/385,822	
Filed	:	August 30, 1999	
Title	:	METHOD AND APPARATUS FOR ELIMINATING UNWANTED STEPS AT EDGES IN GRAPHIC REPRESENTATIONS IN THE LINE RASTER	
Grp./Div.	:	2672	
Examiner	:	Yang, Ryan R.	
Docket No.	:	35671/DBP/E43	

APPELLANT'S BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
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Pasadena, CA 91109-7068
April 14, 2005

Commissioner:

1. REAL PARTY IN INTEREST

The real party in interest and the owner of this application by assignment to it by the inventor applicant Markus Szymaniak is GMD-Forschungszentrum Informationstechnik GmbH, Schloss Birlinghoven, 53757, Sankt Augustin, Germany.

2. RELATED APPEALS AND INTERFERENCES

There are no pending or former related appeals or interferences.

3. STATUS OF CLAIMS

Claims 1 - 15 are pending in the application. Claims 1 - 12 have been rejected. Claims 13 - 15 have been allowed. The rejection of claims 1 - 12 is appealed.

4. STATUS OF AMENDMENTS

No amendments have been filed after the final Office action dated August 10, 2004. Thus, the claims on appeal are the claims as of August 10, 2004.

5. SUMMARY OF CLAIMED SUBJECT MATTER

Claim 1 is the sole independent claim. Claim 1 relates to a method for eliminating unwanted steps in a rastered image. In contrast with conventional anti-aliasing methods that eliminate unwanted steps during the rasterization process, the claimed method involves application of an edge operator to an already rastered image so that an edge in the rastered image may be ascertained from the pixels of the rastered image. See, for example, the Specification[1] at page 15, line 25 through page 17, line 2. Initially, the edge operator is applied to a rastered image portion in order to coarsely ascertain a rastered edge configuration in the rastered image portion. The method then involves determining the position of a first pixel from the amount of those pixels which form the rastered edge configuration or adjoin said rastered edge configuration. See, for example, the Specification at page 16, lines 8 - 13, page 21, lines 15 - 25 and the shaded pixels in Figures 1, 3 and 6. Also, a straight line is approximated to ascertain a probable configuration of an unrastered image edge in the proximity of the first pixel. See, for example, the Specification at page 16, lines 11 - 13 and the lines in Figures 3 and 6; one detailed explanation is provided at page 21, line 26 through page 35. Color is then mixed with the color of the first pixel in accordance with a criterion ascertained from the approximation straight line and the position of the first pixel. See, for example, the Specification at page 16, lines 13 - 15; one detailed explanation is provided at page 35, line 19 through page 41. The method of the claimed invention thus eliminates unwanted edges in (e.g., performs anti-aliasing on) image data which has already been rendered. Applicant refers to this process in its specification as "post-anti-aliasing." See, for example, the Specification at page 21, lines 11 - 14.

Since the method operates on a rastered image, the method may function without any information regarding the edges in an original image representation (e.g., polygon definitions). Instead, this information may be ascertained by application of the edge operator. In contrast,

[1] All references to the Specification herein refer to the English translation filed on or about January 12, 2000.

conventional anti-aliasing methods start with polygon definitions that contain all necessary information concerning the polygon edges. Understandably then, there is no evidence that the use of an edge operator has been previously contemplated for unwanted step operations since such an operation would not be needed.

The above distinction regarding the need for polygon definitions illustrates one potential significant advantage of the claimed method over conventional methods. The conventional methods perform anti-aliasing as an integral part of the rendering process that comprises calculating polygon image data of the objects to be displayed in the image. In contrast, because the claimed method may function without any of the original information regarding the edges in the image, the method may be independent of the rendering process used for creating pixel data.

This is illustrated, for example, in Applicant's Figures 60 and 63. In Figure 60 an anti-aliasing method is implemented in conjunction with a RAMDAC after the frame buffer. Hence, the anti-aliasing method may have no effect on and may not require any modification of the hardware or software components (e.g., the polygon renderer) that generate the rastered image data that is stored in the frame buffer. Similarly, in Figure 63 an anti-aliasing method is implemented in conjunction with the frame buffer. Again, the anti-aliasing method may have no effect on and may not require any modification of the hardware or software components that generate the rastered image data that is sent to the frame buffer.

By providing anti-aliasing outside of the rendering processing components, a system constructed in accordance with one embodiment of the invention may provide anti-aliasing without adversely affecting the real-time capability of the system and without requiring relatively significant amounts of additional memory storage. As a result, a marked improvement in image quality may be achieved without significant added costs.

6. ISSUES

Whether the Examiner improperly rejected claims 1 - 12 under 35 U.S.C. § 103 as being unpatentable over Doll, U.S. Patent No. 6,226,400 in view of Shiraishi, U.S. Patent No. 5,903,276. In particular, the issues are whether the combination of the references fails to teach

every limitation of the claims and whether one skilled in the art would have been motivated to combine these references in a manner that provides the claimed invention.

7. ARGUMENT

In the final Office action dated August 10, 2004, claims 1 - 12 were rejected under 35 U.S.C. § 103 as being unpatentable over Doll, U.S. Patent No. 6,226,400, and further in view of Shiraishi, U.S. Patent No. 5,903,276. Claim 1 is the sole independent claim in rejected claims 1 - 12.

The Examiner's rejections of claims 1 – 12 should be reversed. With respect to each claim 1 – 12, it is Applicant's position that the cited references fail to teach every limitation recited in the claims. For example, the cited references do not teach or suggest "application of an edge operator to a rastered image portion for coarsely ascertaining at least one rastered edge configuration" and "approximation of a straight line for ascertaining a probable configuration of the unrastered image edge" as claimed in claim 1.

It is also Applicant's position that one skilled in the art would not have been motivated to combine the references at all, much less combine the references in a manner that provides the invention of claims 1 - 12. For example, the primary reference cited by the Examiner only relates to the creation of vectors from a rastered image. This reference teaches nothing regarding other limitations in claim 1 concerning, for example, eliminating unwanted steps at edges in image representations. The secondary reference cited by the Examiner relates to an entirely different aspect of the image generation process. There is no evidence of any motivation in either in the references or in the art to combine the references. Accordingly, Applicant respectfully submits that the Examiner has not found references that may be properly combined to reject claim 1.

A. <u>The Cited References Fail to Teach Every Limitation of Claims 1 - 12</u>

The Examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). A proper rejection of claims 1 – 12 under 35 U.S.C. § 103 in the instant case requires that

the cited references expressly or inherently disclose every limitation of the claims. The Examiner cannot meet his burden here.

1. The claimed invention.

The sole independent claim, claim 1, recites as follows:

1. A method of eliminating unwanted steps at edges in image representations in the line raster, in particular in on-line operation, characterized by the steps:

a) application of an edge operator to a rastered image portion for coarsely ascertaining at least one rastered edge configuration in the rastered image portion,

b) determining the position of at least a first pixel from the amount of those pixels which form the rastered edge configuration or adjoin said rastered edge configuration,

c) approximation of a straight line for ascertaining a probable configuration of the unrastered image edge in the proximity of the first pixel,

d) ascertaining a criterion from the approximation straight line and the position of the first pixel for mixing a color X to the color C in the first pixel considered, and

e) mixing the ascertained color X to the color C in the first pixel considered.

2. The Examiner's rejection.

The Examiner contends at paragraph 7 of the final Office action mailed on August 10, 2004 that Doll "discloses a method of eliminating unwanted steps at edges in an image representation in the line raster" and that Doll discloses Elements a), b) and c) as follows:

> Element a): "Figure 2-36 where the vector generator generates an edge according to the color border."
>
> Element b): "The string sequencer 30 then uses the pixel location 32 of the current target pixel, the surface string IDs 24, and the surface string slopes 28 to generate string sequences 34 which define the color borders of the raster image, column 14, line 3-7, where the current target pixel is the first pixel."
>
> Element c): "A string sequence 34 comprises a sequence of connected surface string IDs 24 in an order that follows the contour of the color border, column 14, line 7-9."

The Examiner acknowledges that Doll does not teach Elements d) and e) of claim 1. To address this deficiency, the Examiner incorporates the following teachings of Shiraishi into Doll:

> Element d): "Figure 38 established the criterion to mixing the color, column 20, line 62 – column 22, line 24."
>
> Element e): "Figure 49, where a dot is considered a pixel, column 49, line 10 – 14."

3. The Doll reference.

Doll describes a method and a device for transforming a rastered image into a vector format. Borders of picture elements are identified and transformed into string sequences. Doll, Abstract. The image is thus redefined as a series of vectors, each of which is a mathematical description (e.g., a linear equation) of a portion of the image. Col. 2, lines 12 – 21.

Doll attempts to simplify the conversion process by scanning a neighborhood of cells in the form of a square matrix. The scanning process generates what Doll refers to as a "surface string" that represents the color border at each pixel. Doll then concatenates a series of "surface strings" to generate string sequences. The string sequences are processed by a vector generator to generate vectors that make up the vector image. Col. 4, lines 10 – 20.

Doll deals with a specific problem that crossing borders or overlapping features of the image can be misinterpreted after a transformation from a rastered image representation to a vector format and back to a rastered representation. This results in a misperceiving of the image when converted back into raster format for display. This problem is given the name "contrast tie," and is explained in more detail in the context of Figures 6A - 6C. A border in the background of a situation displayed may appear as a foreground feature in the rastered image after retransformation from the vector format. The method of Doll detects such contrast ties and manipulates color information in the perimeter of a contrast ties in order to give the correct three-dimensional impression in the displayed image. For this, the original raster representation is changed before transformation into a vector format. Col. 17, lines 28 – 50.

Doll says nothing, however, regarding the elimination of unwanted steps at edges. Hence, Doll is directed to an entirely different process than the claimed invention.

4. The Shiraishi reference.

Shiraishi is directed to a device for generating a rastered image from image information defined by a collection of polygons. Shiraishi discloses an anti-aliasing process that involves combining the color initially defined for a selected pixel that will be generated in the rastered image and color initially defined for an adjacent pixel that will be generated in the rastered image. To this end, the process may use edge information from a polygon definition (i.e., the properties of each apex of the polygon) to determine how the polygon edge intersects the selected pixel. Based on the pixel area defined by this intersection, the process may scale the color to be mixed from each pixel.

In accordance with conventional practice, the anti-aliasing method of Shiraishi is an integral part of a method of mapping a polygon representation of an image (the input to the Shiraishi method) onto a pixel matrix representing an anti-aliased rastered image (the output of the Shiraishi method). See, for example, Shiraishi's Abstract and the following citations which summarize the method described by Shiraishi:

a) creating and storing polygon image data (column 6, lines 25 to 41),

b) extracting coordinates of the end points of the edges of the polygons (column 7, lines 13 to 23),

c) determining the orientation of the edges (left, right) (column 7, lines 25 to 32),

d) calculating the edge slopes (column 8, line 30 to column 9, line 2) with the aid of the coordinates of the end-points of the edges,

e) interpolating and storing the edge coordinates X, Y, Z (column 9, lines 20 to 30),

f) calculating for every pixel the portion of the polygons in the pixel area (column 6, lines 44 to 47, column 10, lines 50 to 55). This comprises first quantizing and coding of the edge slope (column 11, lines 4 to 14), and determining and coding the crossing points of the edges with the sides of the pixels (column 11, line 31f), and

g) determining the color of a pixel with the aid of the portion of the pixel areas on both sides of the edge.

The anti-aliasing method of Shiraishi is not "post-anti-aliasing." Shiraishi performs all pixel color adjustment operations during the rendering process <u>before</u> the rastered image is

formed. Hence, Shiraishi utilizes an entirely different technique as compared to the claimed invention.

5. Doll and Shiraishi do not teach all of the elements of claim 1.

Initially, Applicant notes that Doll does not teach or suggest the elimination of unwanted steps at edges in image representations as set forth the preamble of claim 1.

Moreover, Element c) recites the operation "approximation of a straight line for ascertaining a probable configuration of the unrastered image edge in the proximity of the first pixel." Initially, Applicant notes that this is a separate operation from Element a) where an edge operator is applied to a rastered image portion. In contrast, Element c) involves ascertaining a <u>probable</u> configuration of the <u>unrastered</u> image edge (e.g., the edge of a polygon that was rendered to generate the rasterized image). See, for example, the embodiments of Figures 6, 7, 9 and 14 where pixel characteristics are used to estimate a line.

Neither Doll nor Shiraishi teaches or suggests such an operation. Doll only generates "surface strings" based on the locations of the pixels in the raster image. Doll then concatenates the "surface strings" into string sequences. Thus, the lines defined by the string sequences are defined by the <u>pixels in the rastered image</u>, not by ascertaining a probable configuration of, for example, an original unrastered polygon edge.

Applicant also notes that Doll is silent as to the operation of the vector generator. Accordingly, there is no teaching here that the vector generator attempts to perform the operation of Element c). In view of the above, Applicant submits that Doll does not teach or suggest the limitations of Element c).

Element d) involves "ascertaining a criterion from the approximation straight line." In contrast, Shiraishi generates the line information for his anti-aliasing process from the apex information of the polygons. Thus, Shiraishi uses the <u>original image (e.g., polygon) edge</u>. Since, Shiraishi has no need to ascertain a <u>probable configuration</u> of, for example, an original polygon edge, it is clear that Shiraishi does not teach or suggest the limitations of Element d).

In view of the above, Applicant submits that the Doll and Shiraishi, considered either independently or in combination, do not teach or suggest every limitation recited in claim 1.

B. <u>There was no Motivation to Combine the References</u>

Even assuming *arguendo* that Doll and Shiraishi disclose every element in claim 1, the Examiner's rejection under 35 U.S.C. § 103 is improper in this case. It is well-settled that a *prima facie* case of obviousness cannot be established by merely locating references which describe various aspects of a patent applicant's invention. The Examiner must also "show some objective teaching in the prior art . . . that would lead [one of ordinary skill in the art] to combine the relevant teachings of the references." *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *see also,* Ex parte Levengood, 28 USPQ2d 1300, 1302 (BPAI 1993)). Moreover, when the references do not explicitly provide such motivation, "[t]he test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab*, 217 F.3d 1365, 1370 (Fed. Cir. 2000) as quoted in MPEP 2143.01.

The Examiner asserts in paragraph 7 on page 8 of the final Office action that it would have been obvious to modify Doll to include the teachings of Shiraishi because "Doll discloses a method of defining a border of a raster image and Shiraishi discloses the color along the image border can be mixed in order to generate a smooth edge." Applicant submits that the Examiner has failed to make a *prima facie* case here because the references do not explicitly provide motivation to combine and there is no implicit motivation given the teachings of the references, the art and the respective problems being solved.

Initially, Applicant submits that the motivation suggested by the Examiner is predicated on an assumption that the method disclosed in Doll needs to be modified to generate a smooth edge. A careful analysis of Doll in view of the state of the art leads to the conclusion, however, that such modification was never contemplated and, in fact, would in all practicality be unnecessary and undesirable. Accordingly, the Examiner's assertion that Doll should be modified is mere speculation as opposed to a true motivation in the art. That this it true may be seen from the following discussion of the references and the relevant art.

1. There is no explicit motivation to combine the references.

As discussed above, Doll is directed to a process for converting raster images into a vector format. Doll makes no mention of anti-aliasing processing or any need to eliminate unwanted steps in the raster image. Hence there is no suggestion in Doll that the anti-aliasing technique as taught by Shiraishi or any other reference could or should be incorporated into the transformation process disclosed in Doll.

Also as discussed above, Shiraishi is directed to an anti-aliasing process that involves using edge information from a polygon to adjust color in a pixel that is intersected by the edge. Shiraishi teaches that the rastered image data generated by the rasterization process is provided to a frame buffer from which the rastered image data is read out to a display. Shiraishi makes no mention that the disclosed anti-aliasing techniques may be applied to the rastered image or that the teachings therein could or should be used in a system that converts raster images into a vector format.

In view of the above, neither Doll nor Shiraishi provide explicit motivation to combine the two references.

2. The combined teachings of the references, the teachings in the art and the nature of the problem to be solved do not provide an implicit motivation to combine the references.

Initially, Applicant presents a brief summary of the conventional image rendering process to place the teachings of the references and the art in context. A conventional rendering process involves processing a collection of polygon information to generate an array of pixel data. Here, the polygon information is defined in a manner that the desired image will be displayed on a display screen when the pixel data is provided to a display device. An advantage of using polygons to define the image is that pixel data associated with an area within the polygon may be defined, for example, by only defining the characteristics of the polygon at the apexes of the polygon. Thus, an image designer does not need to explicitly define image information for each pixel to be displayed. In this case, the rendering process involves extrapolating the color, transparency, position, etc., of each pixel defined "within" the polygon by using the color, transparency, position, etc. defined at each apex of the polygon.

As discussed at length in the Background section of Applicant's specification, the image generated as a result of a rendering process may exhibit undesired characteristics commonly referred to as aliasing. For example, when an edge of a polygon defines a diagonal line on the display screen the line may be displayed as a series of steps as a result of the finite pixel resolution of the display screen. Undesirable artifacts (e.g., blinking pixels) also may appear at the edges of intersecting polygons where a given pixel may be influenced by both polygons. In an attempt to overcome aliasing problems, a wide variety of anti-aliasing techniques have been developed over the years.

Historically, anti-aliasing techniques are implemented as part of the rendering process. The reason for this is readily apparent given the nature of the problem. A typical anti-aliasing process involves mixing characteristics (e.g., color) of one or more surrounding pixels with a given pixel. Hence, the efficient place to perform such anti-aliasing is during the rendering process where 1) the colors of the pixels are being determined in the first place; 2) all information (e.g., polygon apex information) needed for the process is or soon will be retrieved from polygon memory; and 3) all edge information is readily known from the polygon apex information.

a) The teachings of the references and the art do not provide implicit motivation to combine the references.

As discussed above, Doll is directed to a process for converting raster images into a vector format. Although a previously rastered image is a necessary antecedent to Doll's process, Doll makes little mention of the rendering process. Hence, Doll obviously relies on the well known state of the rendering art to provide a sufficient enabling disclosure as to the generation of the initial rastered image.

After thoroughly studying Doll, Applicant observes that Doll makes no mention of any anti-aliasing process that may be performed on an image. Thus, given that Doll assumes the use of a conventional rasterization process to generate the rastered data and given that Doll makes no mention whatsoever of anti-aliasing, the most reasonable conclusion to be reached is that if anti-aliasing is needed for the images generated by Doll's method, that anti-aliasing would be

provided during the rasterization process in accordance with time-honored, conventional techniques.

Alternatively, given the absence of any mention of anti-aliasing, it is logical to conclude that Doll was not concerned with aliasing in view of the advantages provided by the vector conversion process. In either event, in view of the decades long practice of performing anti-aliasing during the rendering stage and the absence of any cited art that suggests any other method of anti-aliasing, there simply is no basis for assuming that the raster image of Doll should or could be anti-aliased. For example, if the image was already anti-aliased during the rendering process, it would make no sense to incur the extra expense and processing time to provide another round of anti-aliasing on the rastered image.

Moreover, there is no teaching or suggestion that the line information that Doll retrieves from the raster image is of a form that enables anti-aliasing to be accomplished. Shiraishi teaches that line equations used for anti-aliasing are obtained from polygon apex information. These line equations provide the precise relationship between a pixel location and a polygon edge. Consequently, there is an assurance that any color adjustment performed based on the relative positions of a pixel and an edge will accurately relate to the original image.

In contrast, Doll does not provide this precise form of line information. Rather, the string sequences are based on simplified lines slopes as shown in Figure 3. Hence, it is by no means readily apparent that incorporating the processes from Shiraishi into Doll would provide a system that provides effective anti-aliasing and does so in a manner that does not distort the displayed image. In view of these problems, there is not a sufficient teaching that anti-aliasing as taught by Shiraishi could be applied to the raster image of Doll.

Given the above teachings in Doll, Shiraishi and the art, there is no basis for an assertion that anti-aliasing (and in particular the anti-aliasing of Shiraishi) could or should be applied to the raster image of Doll. Accordingly, these factors do not support a finding that there was an implicit motivation to combine Doll and Shiraishi.

b) The problems to be solved do not provide implicit motivation to combine the references.

Doll deals with a completely different problem than the problem addressed by the invention of claim 1 or the problem addressed by Shiraishi. As discussed above, the method of Doll concerns the transformation of a raster representation of an image into a vector representation. In particular, Doll addresses a particular problem in this transformation process, namely the occurrence of a "contrast tie."

Shiraishi on the other hand is directed to solving problems encountered in a conventional anti-aliasing process that is performed during polygon rendering. Thus, the two references are directed at unrelated and mutually exclusive portions of the imaging process: 1) generating the raster image (Shiraishi); and 2) manipulating the raster image (Doll). Given this difference, there would be no motivation for one skilled in the art to look to references dealing with problems in one portion of the imaging process when addressing a problem in an unrelated portion of the process. Moreover, there is no teaching that one skilled in the art would treat "contrast tie' problems using techniques that are used to reduce aliasing.

The claimed invention relates to solving the problem of unwanted steps at edges in image representations in the line raster. This problem is entirely different than the problems addressed by Doll relating to making a transformation from a raster representation to a vector representation of an image and "contrast ties." Moreover, there is no teaching that one skilled in the art would treat "contrast tie' problems using techniques that are used to eliminate unwanted steps at edges. As Doll is directed to an entirely different problem than the invention of claim 1, one skilled in the art seeking to eliminate unwanted steps at edges in image representations in the line raster, in general, would not have looked to Doll for a solution to this problem.

In view of the above, the respective problems solved by Doll, Shiraishi and the claimed invention do not support a finding of any motivation to combine Doll and Shiraishi.

C. Conclusion

Because the cited references do not teach every limitation of claim 1, and because there was no teaching or suggestion to incorporate the cited elements of Shiraishi into Doll in a manner that provided the invention of claim 1, Applicant respectfully submits that the Examiner has failed to set forth a *prima facie* case that independent claim 1 and claims 2 - 12 that depend on claim 1 are obvious in view of the cited references. Accordingly, the Examiner's rejection of claims 1 – 12 should be reversed, and the case should be remanded to the Examiner for allowance of the claims.

Respectfully submitted,

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APPENDIX OF CLAIMS INVOLVED IN THE APPEAL

1. A method of eliminating unwanted steps at edges in image representations in the line raster, in particular in on-line operation, characterized by the steps:

a) application of an edge operator to a rastered image portion for coarsely ascertaining at least one rastered edge configuration in the rastered image portion,

b) determining the position of at least a first pixel from the amount of those pixels which form the rastered edge configuration or adjoin said rastered edge configuration,

c) approximation of a straight line for ascertaining a probable configuration of the unrastered image edge in the proximity of the first pixel,

d) ascertaining a criterion from the approximation straight line and the position of the first pixel for mixing a color X to the color C in the first pixel considered, and

e) mixing the ascertained color X to the color C in the first pixel considered.

2. A method as set forth in claim 1 characterized in that the criterion of method step d), in dependence on the position of the pixel being considered relative to the approximation straight line, establishes which color X is mixed to the color C of the pixel being considered.

3. A method as set forth in claim 2 characterized in that the criterion in accordance with method step d), in dependence on the position of the pixel being considered relative to the approximation straight line, establishes that the color of at least one adjacent pixel is mixed in weighted mode to the color of the pixel being considered.

4. A method as set forth in claim 1 characterized in that in the case of a pixel being considered which is not intersected by the approximation straight line, the color remains unchanged.

5. A method as set forth in claim 1 characterized in that in the case of a pixel being considered which is intersected by the approximation straight line the resultant color R is determined in accordance with the following criterion:

the approximation straight line divides the pixel being considered into two surface portions F1, F2, wherein F1 + F2 = 1, with 1 being the total area of the pixel, wherein F1 is that surface portion in which the pixel center point lies:

- mixed to color C of the pixel being considered is the color X of that adjacent pixel which adjoins the longest edge, formed by the raster, of the surface portion F2.

6. A method as set forth in claim 5 characterized in that the resultant color R arises out of the original color C of the pixel being considered and the mixed color X of an adjacent pixel in accordance with the following equation:

$$R = F1 \times C + F2 \times X$$

7. A method as set forth in claim 5 characterized in that the surface portions F1, F2 are approximated by a suitable approximation process.

8. A method as set forth in claim 1 characterized in that said method steps are applied to an image portion treated by means of rendering and/or a shading process.

9. A method as set forth in claim 8 characterized in that the shading/rendering is triangle- or scanline-based, or that it involves Gouraud or Phong shading.

10. A method as set forth in one of the preceding claims characterized in that the above-specified method steps a) through e) are carried out individually or in groups in time-displaced relationship.

11. A method as set forth in claim 10 characterized in that the time displacement is at least one image line.

12. A method as set forth claim 1 characterized in that the processing is effected in time-displaced relationship in a frame buffer without further intermediate storage.